AMENDMENTS TO THE CLAIMS

1. (currently amended) A process for creating a barrier layer on a semiconductor substrate comprising:

forming a discrete region in the semiconductor substrate; and

exposing ~~the~~ a surface of the discrete region to a metal-containing source gas and to ozone gas to react the source gas with the ozone gas to form from the reaction a barrier layer of metal oxide film on the surface of the discrete region;

wherein the source gas is selected from the group consisting of aluminum trimethane, aluminum tetramethane, titanium tetramethane, a vaporized tantalum in the form of an organometallic compound, trimethyl aluminum hydrate, and a Ru or Mo metalorganic precursor.

2. (currently amended) A process as recited in claim 1, wherein the source gas and the ozone gas are reacted in ~~the~~ a CVD process at a pressure of about 0.1 torr to about 100 torr.

3. (cancelled)

4. (currently amended) A process as recited in claim 1, wherein the metal oxide film of the barrier layer is selected from [[a]] the group consisting of a conductive metal oxide film ~~file~~, Ru oxide film, and aluminum oxide film.

5. (currently amended) A process as recited in claim 1 [[3]], wherein the ozone gas volatilizes and frees into the atmosphere substantially all of the carbon contained in the source gas.

6. (currently amended) A process as recited in claim 1, wherein forming the discrete region is followed by covering the discrete region with [[a]] <u>an</u> oxide layer and etching a contact opening through the oxide layer to contact the discrete region, and wherein ~~the~~ <u>a</u> surface of the contact opening is covered with the barrier layer.

7. (currently amended) A process as recited in claim 6, wherein exposing the surface of the discrete region to a metal-containing source gas and ozone is followed <u>by</u> metallizing the contact opening with a metallization material, wherein the barrier layer functions as a diffusion barrier to substantially ~~preventing~~ <u>prevent</u> the metallization material from contacting the discrete region.

8. (currently amended) A process as recited in claim [[1]] <u>6</u>, wherein the discrete region is covered with a second structural layer, with the discrete region and the second structural layer being separate from the oxide layer, the process further comprising etching a via opening through the oxide layer above the discrete region to electrically connect the discrete region and the second structural layer, and wherein the via opening is covered with the barrier layer.

9. (currently amended) A process as recited in claim 1, further comprising:

forming [[a]] <u>an</u> oxide layer over the barrier layer; and

etching an opening in the oxide layer with an etchant, wherein the barrier layer functions as an etch stop to substantially prevent the etchant from contacting the discrete region.

10. (currently amended) A process as recited in claim 1, wherein exposing the surface of the discrete region is accomplished by disposing the semiconductor substrate in a CVD reaction chamber and introducing a feed stream containing an inert carrier, the metal containing source gas ~~comprising a metal organic source gas~~, and the ozone gas into the reaction chamber.

11. (cancelled)

12. (currently amended) A process as recited in claim 10, wherein the barrier layer is selected from [[a]] <u>the</u> group consisting of a conductive metal oxide <u>film</u> ~~file~~, Ru oxide film, and aluminum oxide film.

13. (original) A process as recited in claim 7, wherein the diffusion barrier is in electrical communication with the discrete region.

14. (currently amended) A process of creating a barrier layer on a semiconductor substrate comprising:

forming a discrete region in the semiconductor substrate;

exposing ~~the~~ <u>a</u> surface of the discrete region to ozone gas and to a source gas selected from the group consisting of aluminum trimethane, <u>aluminum tetramethane,</u> titanium tetramethane, a vaporized tantalum in the form of an organometallic compound, trimethyl aluminum hydrate, <u>and</u> a Ru <u>or Mo</u> metalorganic precursor~~, and dimethyl aluminum hydrate~~ to react the source gas with the ozone gas and deposit from said reaction a barrier layer of metal oxide film on the surface of the discrete region.

15. (currently amended) A process for creating a barrier layer on a semiconductor substrate comprising:

forming a discrete region in the semiconductor substrate;

covering the discrete region with an oxide layer;

etching a contact opening through the oxide layer to contact the discrete region;

exposing the surface of the discrete region to a metal-containing source gas and to ozone gas to react the source gas with the ozone gas to deposit a barrier layer of metal oxide film on the surface of the discrete region, wherein the surface of the contact opening is covered with the barrier layer, and the source gas is selected from the group consisting of aluminum trimethane, aluminum tetramethane, titanium tetramethane, a vaporized tantalum in the form of an organometallic compound, trimethyl aluminum hydrate, and a Ru or Mo metalorganic precursor;

forming a structural layer over the barrier layer, said structural layer being prevented by the barrier layer from reacting with the discrete region; and

metallizing the contact opening with a metallization material, wherein the barrier layer functions as a diffusion barrier to substantially ~~preventing~~ prevent the metallization material from contacting the discrete region and wherein the diffusion barrier covers the discrete region.

16-30. (cancelled)

31. (currently amended) A process as recited in claim 1, wherein said barrier layer of metal oxide film is formed at a temperature within the range ~~form~~ from about 300 °C to about 1000 °C.

32. (currently amended) A process as recited in claim 14, wherein said metal oxide film is deposited at a temperature within the range ~~form~~ from about 300 °C to about 1000 °C.

33. (currently amended) A process as recited in claim 15, wherein said metal oxide film is deposited at a temperature within the range ~~form~~ from about 300 °C to about 1000 °C.

34-36. (cancelled)